DOCUMENT RESUME

ED 264 295 TM 850 788

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TITLE Analysis of a Telephone Survey: A Case Study.
PUB DATE 7 Nov 85
NOTE 14p.; Paper presented at the Annual Meeting of the Mid-South Educational Research Association (14th, Biloxi, MS, November 7, 1985).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Administrator Attitudes; *Attitude Measures; *Cost Effectiveness; *Data Collection; Guidance Programs; Needs Assessment; Questionnaires; *Research Methodology; *School Surveys; *Telephone Communications Systems
IDENTIFIERS *Telephone Surveys; Tennessee

ABSTRACT

This study analyzes the cost effectiveness of a telephone survey, using data collected from a survey of 110 Tennessee public school superintendents. The subject of the survey was the status and need for elementary guidance. A telephone survey approach was selected based on time and cost factors, since information had to be completed in the shortest time possible in order to conduct subsequent activities within a two-month period before school ended. Letters and copies of questionnaires for systems with and without guidance counselors were mailed out in advance of phone calls. Follow-up phone interviews sought answers to mailed questionnaires, and the survey was completed in 2 weeks with a 100 percent response rate. Tables and graphs relay the following information: (1) size of Tennessee public school systems; (2) number of calling days and completion rate; (3) percentage of calls made to complete questionnaire; (4) length of calls obtaining information; (5) contact supplying information; (6) times information obtained and source of information; and (7) total cost of the telephone survey. (LMO)

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Analysis of a Telephone Survey: A Case Study

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Paper Prepared for Presentation at the Fourteenth Annual Meeting
of the Mid-South Educational Research Association,
Biloxi, Mississippi, November 7, 1985

ANALYSIS OF A TELEPHONE SURVEY: A CASE STUDY

Introduction

Implementation time, cost, and completeness and accuracy of information in meeting the research objectives are major considerations when selecting a survey approach. The relative merits of mail, telephone, and face-to-face surveys have been summarized by Frey (1983, p. 54). In general, a major advantage of the telephone survey is the speed with which the survey can be completed. In this regard, the telephone interview appears to have the advantage. Dillman (1983) estimates that mail surveys can take close to two months after the instrument has been developed (p. 370). Face-to-face interviews required more than double the amount of time per completion than telephone interviews in a study by Groves and Kahn (1979).

Telephone surveys have been found to be from 17% to 125% more costly than mail surveys (Dillman, 1981; Hochstim, 1962; and Siemiatycki, 1979). Face-to-face interviews are more expensive still, costing from 51% to 134% more per completed interview than those done by telephone (Groves & Kahn, 1979; Hochstim, 1962; Siemiatycki, 1979).

The research on response rates is inconsistent. Response rates were reported as generally better for telephone and face-to-face surveys than for mail surveys by Frey (1983, p. 54). Siemiatycki (1959) found that use of a combination of telephone and mail approaches could produce a higher response rate than home interviews at less than half the cost. There was relatively little difference between use of a mail or telephone approach as an initial procedure in terms of either cost or response rate. Goyder (1985) also found nonresponse rates similar for interviews and mail surveys but cited the problem of adequately determining the eligibility of nonrespondents in mail surveys. Shosteck and Fairweather (1979) had a higher percentage

of interviews completed by mail than by personal interview when surveying a specific population, physicians. The researchers did, however, determine that a larger percentage of the personal interview group was ineligible than the mail survey group. There was also a significantly higher refusal rate for personal interviews than for telephone interviews in a study by Trusso, Benz, and Newman (1983).

Much of the research on survey methodology has been conducted in surveying opinions or attitudes with the sample selected from a larger population for whom the salience of the topic was unknown. The survey upon which this paper is based is one which was aimed at a specific, identifiable population (school superintendents in Tennessee). The question of eligibility of respondents was not a concern. The focus of the survey, the need for elementary guidance counselors in their school systems, was one which was thought to have relevance to the superintendents. In addition, the survey was part of a study conducted under the authorization of the State Board of Education.

The major factor in determining a research strategy was time required for implementation. The survey had to be completed in the shortest time possible in order to conduct subsequent activities within a two-month period before school ended. Cost was a secondary factor. Because of the need for speed, the telephone survey approach was selected. No reports of telephone surveys of school system administrators were found which provided detailed information regarding the most facilitative procedures for use with this population. The purpose of presentation of this case study is to provide information which might be of value to others conducting similar research.

Methods

Purpose

The focus of this study is on cost effectiveness of a telephone survey, based on the examination of data collection records. The survey involved 110 Tennessee public school systems, ranging in size from one to 119 schools per system, with the intention of determining the status and need for elementary guidance. (See Table 1.)

Table 1

Sizes of Tennessee Public School Systems

Number of Schools Within System	N	%[a]
1- 5	27	24.5
6-10	39	35.5
11-15	22	20.0
16-20	12	10.9
21-25	4	3.6
26-30	0	0.0
31-35	2	1.8
36-40	0	0.0
41-45	2	1.8
46-50	0	0.0
51-55	1	0.9
119	1	0.9

[a]Percentage may not total 100.0 due to rounding.

Information on number and length of phone calls and dates was gathered from the telephone bills with consideration given to the time zone in which calls were completed. The name and position of respondents were recorded from the questionnaires.

For the purposes of this study, data were considered from only those systems for which (1) answers were obtained through the telephone survey

(a few superintendents completed and returned the questionnaire by mail); and (2) there were no elementary guidance counselors employed. A different questionnaire was used for systems in which elementary counselors were employed.

Description of Survey Procedures

In early April, an explanatory letter and copies of two sets of questions which would be used in the telephone survey were mailed to superintendents. They were requested to answer the appropriate questionnaire (one if the system presently employed elementary school guidance counselors, the other if it did not) and make the responses available to a designated representative if the superintendent anticipated not being available when telephoned.

Approximately one week following the mailout, three female graduate assistants began the telephone survey which lasted nine days and took approximately 40.5 hours. A Watts telephone line was used for cost efficiency since calling was done during business hours. Each caller began the interview with a short, standard explanation of who she was and the reason for her call, after which she asked to speak with the superintendent.

Once the standard introduction was given to the superintendent, the caller asked if the superintendent had a few minutes to respond to the questionnaire and suggested it might be helpful to respond from the copy which had been sent in the mail. If the copy had been misplaced, it was first determined whether or not the system presently had elementary school counselors so that questions might be read from the appropriate questionnaire to the superintendent.

If the superintendent could not be reached and the secretary had not been given the completed questionnaire, the caller would ask (1) when the superintendent would be available, and/or (2) if she might speak with other personnel, i.e. assistant superintendent, director of guidance. Some superintendents had given the mailed copy of the questionnaire to one of these personnel so that they might respond to the survey.

The interview was ended after all questions were answered and any comments had been written down and reflected back to the respondent for clarification. The callers extended their appreciation for the respondents' cooperation and closed the interview. Callers then double checked the questionnaire to ensure that all information was correct and complete.

The Questionnaire

The questionnaire used for this study was two pages in length and contained pertinent information about the system [system name, identification (i.d.) number, superintendent's name, and telephone number] at the top of the front page. Because Tennessee is divided by the time line, each system was assigned an i.d. number based on its location in the state. In addition there were spaces provided for the date, time, and name/position of respondent providing the information. When call backs were necessary, date and time were written in a provided area and updated as needed. Again, once questionnaires were completed, this information was checked for accuracy.

Results and Discussion

Number of Calling Days

The telephone survey was 95.5% complete within five calling days (excluding weekends) and 100% complete within two weeks. (See Table 2.) The most productive day, in terms of completed questionnaires, was the third day, Friday (n=42), completing 38.2% of the total number of questionnaires. It is followed by the fourth day, Monday (n=31), completing 28.2% of the total, and by the second day, Thursday (n=20), completing 18.2% of the total questionnaires.

Table 2

Number of Calling Days and Completion Rate

Day	Completions/ Attempts	Daily Success Rate	Total Completion Rate	Cumulative Comp. Rate
1 Wednesday	2/5	40%	1.8%	1.8%
2 Thursday	20/30	67%	18.2%	20.0%
3 Friday	42/57	74%	38.2%	58.2%
4 Monday	31/36	86%	28.2%	86.4%
5 Tuesday	10/25	40%	9.1%	95.5%
6 Wednesday	2/6	33%	1.8%	97.3%
7 Thursday	2/3	67%	1.8%	99.1%
9 Monday	1/2	50%	0.9%	100.0%

Productivity must also be based on the ratio of completed calls to total calls attempted for a particular day. In these terms, the fourth day, Monday, was most productive as 31 out of 36 calls were completed for a success rate of 86%. It is closely followed by the third day, Friday, with a success rate of 74% (42 completed calls out of 57 attempts), and by the second and seventh days, both Thursdays, with a 67% success rate. Number of attempts per day varied with availability of callers' time and information received from school personnel concerning optimum times to reach superintendents.

Number of Calls Made

With some school systems it took several calls to reach the appropriate source of information. However with 69% of the systems information was obtained on the first telephone call (n=76) as shown in Figure 1. The second call added 19% (n=21) and the third call (n=8) added 7% for a completion of 95% of the survey in three calls. The maximum number of calls to any school system was five (n=2).

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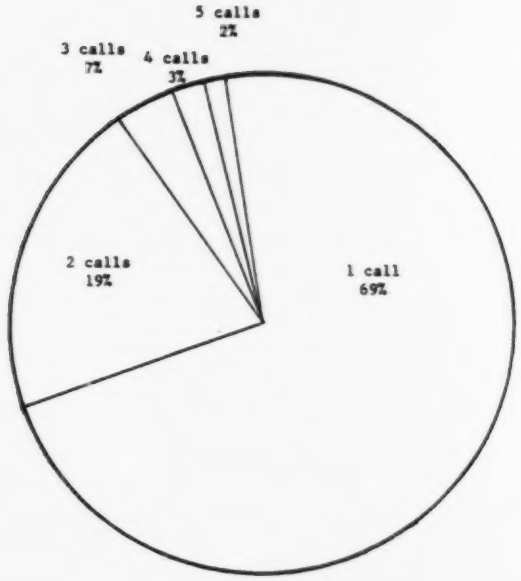
FIGURE 1

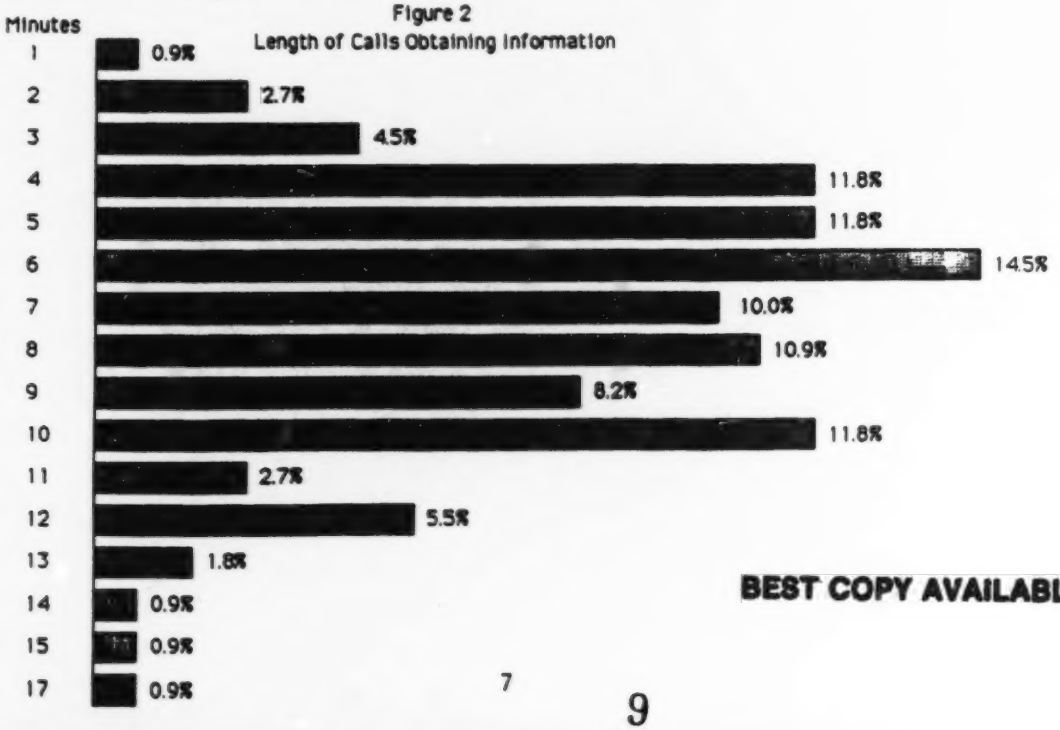
Percentage of Calls Made to Complete Questionnaire



Length of Calls

Telephone calls in which information was obtained varied in length from one to 17 minutes (see Figure 2), with a mode of six minutes (14.5%) and a median of seven minutes. The majority of the calls (79%) occurred within the 4-10 minute range.

Figure 2
Length of Calls Obtaining Information



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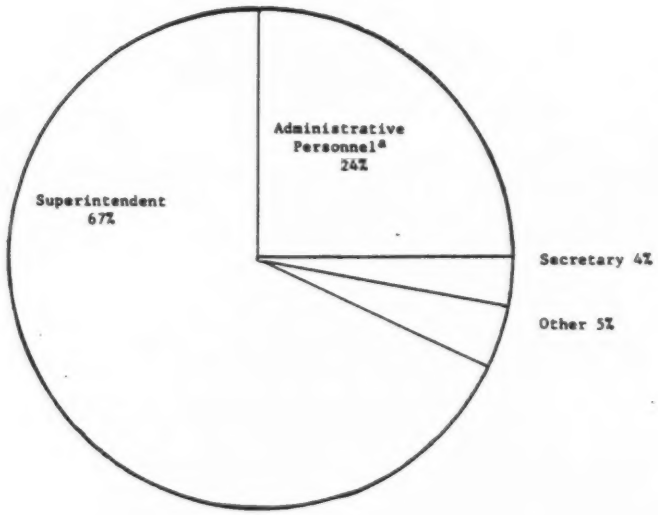
Contact Supplying Information

The contact most often supplying information for the survey was the superintendent (67%) as shown in Figure 3. Other administrative personnel were also informative (24%) when asked to complete the survey. Secretaries and "Other" accounted for 4% and 5%, respectively.

FIGURE 3

Contact Supplying Information



[a]Administrative Personnel include Assistant Superintendent, Principal, Supervision of Instruction.

Times Information Obtained

Telephone calls were made throughout the school day at varying times, again depending on callers' time and information regarding optimum times to call. The largest percentages of final calls in which information was obtained were placed between 12:00 and 2:00 P.M. (20.7% and 23.4%, respectively). Calls placed between 10:00 A.M. and 12:00 P.M. proved more effective (16.2% and 10.8%, respectively) than late afternoon calls between 2:00 and 4:00 P.M. (8.1% and 9.0%, respectively). Least fruitful were early morning

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calls between 8:00 and 10:00 A.M., which accounted for 5.4% each. On the other hand, when considering cost effectiveness (ratio of completions to attempts), 8:00 to 10:00 A.M., 12:00 to 1:00 P.M., and 3:00 to 4:00 P.M. were most productive. (See Table 3.)

Table 3

Times Information Obtained and Source of Information

Time	Supt.	Secre-tary	Admin. Person-nel[a]	Other	Comple-tions/ Attempts	Hourly Success Rate	Total Completion Rate[b]
8:00 - 9:00 AM	3	0	3	0	6/8	75%	5.4%
9:01 - 10:00	4	1	1	0	6/8	75%	5.4%
10:01 - 11:00	15	0	1	2	18/25	72%	16.2%
11:01 - 12:00	5	0	6	1	12/18	67%	10.8%
12:01 - 1:00 PM	17	0	5	1	23/28	82%	20.7%
1:01 - 2:00	21	2	3	0	26/43	60%	23.4%
2:01 - 3:00	4	1	3	1	9/17	53%	8.1%
3:01 - 4:00	5	0	5	0	10/12	82%	9.0%
4:01 - 5:00					0/3	0%	0.0%

[a]Administrative Personnel include Assistant Superintendent, Principal, Supervisor of Instruction.

[b]Percentage may not equal 100.0 due to rounding.

Total Cost

Total cost of the survey was computed based on telephone charges, hourly charges for callers' time (40.5 hours) in actually doing the telephoning and recording information, duplication and mailing costs for preliminary letters to superintendents, and duplication charges for forms on which the callers recorded the information. It should be noted that there is a slight overstatement of the labor cost as labor charges for calls placed to systems not included in this study were not calculated separately.

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As shown in Table 4, telephone charges ($227.51) and graduate assistants' time ($225.99) made up the bulk of the expense, unique to the telephone survey. The cost for the preliminary mailing/postage ($31.24) and duplication of forms ($42.00) brought the total cost of the survey to $526.74 with an average cost per completed questionnaires of $4.79.

Table 4

Total Cost of Telephone Survey

Telephone Charges	$227.51
Graduate Student Labor	225.99*
Preliminary Mailing/Postage	31.24
Duplication	42.00
TOTAL	$526.74
Average Cost per Completed Questionnaire	$4.79

*Does not include graduate student fee waiver.

Conclusions

From the results of this case study, we would make several recommendations for similar surveys:

(1) An explanatory letter and copy of the survey should be mailed prior to the telephone survey. This keeps the length of the calls brief because answers have already been developed and callers do not have to spend time explaining the questions to the respondents.

(2) Each caller should have a script to read from to cut down on the length of calls and ensure consistency in data collection.

(3) When working with superintendents or a similar group of administrators, the largest amount of questionnaires were completed between 12:00 and 2:00 P.M. However, 8:00 to 10:00 A.M., 12:00 to 1:00 P.M., and 3:00 to 4:00 P.M. were most cost efficient when comparing number of attempts with completed questionnaires.

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(4) If an explanatory letter and survey similar to the one in this project (two pages in length) is used, it is expected that most calls will last approximately six minutes.

(5) The labor costs could be reduced by using minimum wage employees (i.e. work study students) as callers instead of graduate students. The graduate students in this survey, however, had interviewing skills and knowledge of the survey topic that was an asset when collecting information from the respondents.

(6) Cost effectiveness is drastically reduced after three calls to a respondent. In this study, only 5% of the surveys had not been completed after three calls. If a response rate less than 100% is acceptable, the costs might be reduced slightly and the survey could also be completed faster by not waiting for the few remaining nonrespondents.

With the questionnaire and procedures described in this study, a telephone survey was highly effective. Within two weeks the survey was completed with a 100% response rate. It should be noted, however, that the topic in this survey instigated much interest within the school systems, which most likely increased the response rate. If time limitations are a concern, as was the case in this survey, then a telephone survey would be more efficient although the cost would be considerably more than that of a mail survey. It should also be stated that this survey was geographically limited within one state. Longer calling distances over a larger survey area would increase the telephone cost. Each survey is a unique undertaking in regard to the funds available and the time allotted for completion. These are important factors to consider when determining procedures for any survey.

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